Pushing the Envelope			
2006 Mathematics			
Program of Studies			
Kentucky Mathematics			
Grade 5			
Activity/Lesson	**State**	**Standards**	
History of Aviation Propulsion (pgs. 5-9)	KY	MA.5.MA-5-M-S-MPA2	Measurement: Students will use charts and tables to determine time schedules, work with time zones and estimate time
History of Aviation Propulsion (pgs. 5-9)	KY	MA.5.MA-5-M-S-SM3	Measurement: Students will convert units of time and determine elapsed time
Types of Engines (pgs. 11-23)	KY	MA.5.MA-5-M-U-3	Measurement: Students understand that appropriate techniques, tools and formulas are used to determine measurements.
Chemistry (pgs. 25-41)	KY	MA.5.MA-5-M-U-3	Measurement: Students understand that appropriate techniques, tools and formulas are used to determine measurements.
Chemistry (pgs. 25-41)	KY	MA.5.MA-5-M-S-MPA3	Measurement: Students will apply standard units of measure to length, weight, temperature and liquid capacity
Chemistry (pgs. 25-41)	KY	MA.5.MA-5-M-S-MPA6	Measurement: Students will use standard units to determine area and perimeter of triangles and rectangles and volume of rectangular prisms and apply these skills to solve real-world and mathematical problems
Physics and Math (pgs. 43-63)	KY	MA.5.MA-5-NPO-S-NS4	Number properties and operations: Students will explore the use of simple ratios to describe problem situations
Physics and Math (pgs. 43-63)	KY	MA.5.MA-5-M-U-3	Measurement: Students understand that appropriate techniques, tools and formulas are used to determine measurements.
Physics and Math (pgs. 43-63)	KY	MA.5.MA-5-AT-S-VEO3	Algebraic thinking: Students will use variables or missing values to model verbal descriptions of real-world situations
Physics and Math (pgs. 43-63)	KY	MA.5.MA-5-AT-S-EI2	Algebraic thinking: Students will model real-world situations with simple number sentences using manipulatives, numbers, variables and/or symbols
Physics and Math (pgs. 43-63)	KY	MA.5.MA-5-AT-U-6	Algebraic thinking: Students understand that functions can be written in words, as a symbolic sentence, or in a table.
Rocket Activity (pgs. 69-75)	KY	MA.5.MA-5-M-U-3	Measurement: Students understand that appropriate techniques, tools and formulas are used to determine measurements.
Pushing the Envelope			
2006 Mathematics			
Program of Studies			
Kentucky Mathematics			
Grade 6			
Activity/Lesson	**State**	**Standards**	

Types of Engines (pgs. 11-23)	KY	MA.6.MA-6-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Types of Engines (pgs. 11-23)	KY	MA.6.MA-6-M-S-MPA6	Measurement: Students will explain how measurements and measurement formulas are related or different (e.g., compare the perimeter with the area of a rectangle)
Chemistry (pgs. 25-41)	KY	MA.6.MA-6-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Chemistry (pgs. 25-41)	KY	MA.6.MA-6-M-S-MPA6	Measurement: Students will explain how measurements and measurement formulas are related or different (e.g., compare the perimeter with the area of a rectangle)
Chemistry (pgs. 25-41)	KY	MA.6.MA-6-M-S-SM2.c	Measurement: Students will estimate, compare and convert (meaning to make ballpark comparisons/not memorize conversion factors between U.S. and metric) units of measurement for length, weight/mass and volume/capacity within the U.S. customary system and within the metric system (volume/capacity (e.g., cups, pints, quarts, gallons, milliliters, liters))
Chemistry (pgs. 25-41)	KY	MA.6.MA-6-AT-S-VEO2	Algebraic thinking: Students will substitute numerical values for variables and evaluate algebraic expressions
Chemistry (pgs. 25-41)	KY	MA.6.MA-6-AT-S-EI2	Algebraic thinking: Students will solve problems involving simple formulas (e.g., A = lw, D = rt)
Physics and Math (pgs. 43-63)	KY	MA.6.MA-6-NPO-U-4	Measurement: Students understand that proportional reasoning is a tool for modeling and solving problems encountered in everyday situations.
Physics and Math (pgs. 43-63)	KY	MA.6.MA-6-NPO-S-RP2	Number properties and operations: Students will develop meaning of ratio (e.g., describe and compare two sets of data using ratios and appropriate notations: 3:5, 3/5, 3 to 5)
Physics and Math (pgs. 43-63)	KY	MA.6.MA-6-NPO-S-RP3	Number properties and operations: Students will define and apply ratios to solve real-world problems
Physics and Math (pgs. 43-63)	KY	MA.6.MA-6-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Physics and Math (pgs. 43-63)	KY	MA.6.MA-6-M-S-MPA6	Measurement: Students will explain how measurements and measurement formulas are related or different (e.g., compare the perimeter with the area of a rectangle)
Physics and Math (pgs. 43-63)	KY	MA.6.MA-6-AT-S-PRF2	Algebraic thinking: Students will represent, interpret and describe function relationships through tables, graphs and verbal rules

Rocket Activity (pgs. 69-75)	KY	MA.6.MA-6-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Rocket Activity (pgs. 69-75)	KY	MA.6.MA-6-M-S-MPA6	Measurement: Students will explain how measurements and measurement formulas are related or different (e.g., compare the perimeter with the area of a rectangle)
Rocket Activity (pgs. 69-75)	KY	MA.6.MA-6-AT-S-EI2	Algebraic thinking: Students will solve problems involving simple formulas (e.g., A = lw, D = rt)
Pushing the Envelope			
2006 Mathematics			
Program of Studies			
Kentucky Mathematics			
Grade 7			
Activity/Lesson	**State**	**Standards**	
Types of Engines (pgs. 11-23)	KY	MA.7.MA-7-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Types of Engines (pgs. 11-23)	KY	MA.7.MA-7-M-S-MPA6	Measurement: Students will explain how measurements and measurement formulas are related or different (e.g., perimeter and area of rectangles)
Chemistry (pgs. 25-41)	KY	MA.7.MA-7-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Chemistry (pgs. 25-41)	KY	MA.7.MA-7-M-S-MPA6	Measurement: Students will explain how measurements and measurement formulas are related or different (e.g., perimeter and area of rectangles)
Chemistry (pgs. 25-41)	KY	MA.7.MA-7-AT-S-VEO2	Algebraic thinking: Students will substitute values for variables to evaluate algebraic expressions
Chemistry (pgs. 25-41)	KY	MA.7.MA-7-AT-S-EI2	Algebraic thinking: Students will solve problems involving formulas
Physics and Math (pgs. 43-63)	KY	MA.7.MA-7-NPO-U-4	Number properties and operations: Students understand that proportional reasoning is a tool for modeling and solving problems encountered in everyday situations.
Physics and Math (pgs. 43-63)	KY	MA.7.MA-7-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Physics and Math (pgs. 43-63)	KY	MA.7.MA-7-M-S-MPA6	Measurement: Students will explain how measurements and measurement formulas are related or different (e.g., perimeter and area of rectangles)
Physics and Math (pgs. 43-63)	KY	MA.7.MA-7-AT-S-VEO2	Algebraic thinking: Students will substitute values for variables to evaluate algebraic expressions

Physics and Math (pgs. 43-63)	KY	MA.7.MA-7-AT-S-EI2	Algebraic thinking: Students will solve problems involving formulas
Rocket Activity (pgs. 69-75)	KY	MA.7.MA-7-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Rocket Activity (pgs. 69-75)	KY	MA.7.MA-7-M-S-MPA6	Measurement: Students will explain how measurements and measurement formulas are related or different (e.g., perimeter and area of rectangles)
Rocket Activity (pgs. 69-75)	KY	MA.7.MA-7-AT-S-EI2	Algebraic thinking: Students will solve problems involving formulas
Pushing the Envelope			
2006 Mathematics			
Program of Studies			
Kentucky Mathematics			
Grade 8			
Activity/Lesson	**State**	**Standards**	
Types of Engines (pgs. 11-23)	KY	MA.8.MA-8-NPO-S-RP2	Number properties and operations: Students will derive and use formulas for various rates (e.g., distance/time, miles per hour)
Types of Engines (pgs. 11-23)	KY	MA.8.MA-8-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Types of Engines (pgs. 11-23)	KY	MA.8.MA-8-M-S-MPA7	Measurement: Students will develop and apply formulas for volume and surface area of cubes, cylinders and right rectangular prisms; investigate relationships between and among them
Chemistry (pgs. 25-41)	KY	MA.8.MA-8-NPO-S-RP2	Number properties and operations: Students will derive and use formulas for various rates (e.g., distance/time, miles per hour)
Chemistry (pgs. 25-41)	KY	MA.8.MA-8-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Chemistry (pgs. 25-41)	KY	MA.8.MA-8-M-S-MPA7	Measurement: Students will develop and apply formulas for volume and surface area of cubes, cylinders and right rectangular prisms; investigate relationships between and among them
Physics and Math (pgs. 43-63)	KY	MA.8.MA-8-NPO-U-4	Number properties and operations: Students understand that proportional reasoning is a tool for modeling and solving problems encountered in everyday situations.
Physics and Math (pgs. 43-63)	KY	MA.8.MA-8-NPO-S-RP2	Number properties and operations: Students will derive and use formulas for various rates (e.g., distance/time, miles per hour)
Physics and Math (pgs. 43-63)	KY	MA.8.MA-8-AT-S-VEO2	Algebraic thinking: Students will, given a formula, substitute appropriate elements from a real-world or mathematical situation

Physics and Math (pgs. 43-63)	KY	MA.8.MA-8-AT-S-VEO3	Algebraic thinking: Students will describe, define and provide examples of variables and expressions with a missing value based on real-world and/or mathematical situations
Rocket Activity (pgs. 69-75)	KY	MA.8.MA-8-NPO-S-RP2	Number properties and operations: Students will derive and use formulas for various rates (e.g., distance/time, miles per hour)
Rocket Activity (pgs. 69-75)	KY	MA.8.MA-8-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Rocket Activity (pgs. 69-75)	KY	MA.8.MA-8-AT-S-VEO2	Algebraic thinking: Students will, given a formula, substitute appropriate elements from a real-world or mathematical situation
Rocket Activity (pgs. 69-75)	KY	MA.8.MA-8-AT-S-EI2	Algebraic thinking: Students will solve problems involving formulas
Pushing the Envelope			
2006 Mathematics			
Program of Studies			
Kentucky Mathematics			
Grades 9-12			
Activity/Lesson	**State**	**Standards**	
Types of Engines (pgs. 11-23)	KY	MA.9-12.MA-HS-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Chemistry (pgs. 25-41)	KY	MA.9-12.MA-HS-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Chemistry (pgs. 25-41)	KY	MA.9-12.MA-HS-M-S-MPA4	Measurement: Students will describe how change in one or more dimensions of a geometric figure or object affects the perimeter, circumference, area and/or volume of the figure or object
Physics and Math (pgs. 43-63)	KY	MA.9-12.MA-HS-NPO-U-5	Number properties and operations: Students understand that proportional reasoning is a tool for modeling and solving problems encountered in everyday situations.
Physics and Math (pgs. 43-63)	KY	MA.9-12.MA-HS-NPO-S-RP1	Number properties and operations: Students will calculate and apply ratios, proportions, rates and percentages to solve problems
Physics and Math (pgs. 43-63)	KY	MA.9-12.MA-HS-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Physics and Math (pgs. 43-63)	KY	MA.9-12.MA-HS-AT-S-PRF6	Algebraic thinking: Students will interpret representations of functions of two variables
Physics and Math (pgs. 43-63)	KY	MA.9-12.MA-HS-AT-S-PRF7	Algebraic thinking: Students will use a variety of symbolic representations, including recursive and parametric equations, for functions and relations

Physics and Math (pgs. 43-63)	KY	MA.9-12.MA-HS-AT-S-VEO12	Algebraic thinking: Students will evaluate polynomial and rational expressions and expressions containing radicals and absolute values at specified values of their variables
Physics and Math (pgs. 43-63)	KY	MA.9-12.MA-HS-AT-S-EI9	Algebraic thinking: Students will approximate and interpret rates of change from graphical and numerical data
Physics and Math (pgs. 43-63)	KY	MA.9-12.MA-HS-AT-S-EI10	Algebraic thinking: Students will graph a linear equation and demonstrate that it has a constant rate of change
Physics and Math (pgs. 43-63)	KY	MA.9-12.MA-HS-AT-S-EI17	Algebraic thinking: Students wil write and solve linear sentences, describing real-world situations by using and relating formulas, tables, graphs and equations
Rocket Activity (pgs. 69-75)	KY	MA.9-12.MA-HS-M-U-3	Measurement: Students understand that measurements are determined by using appropriate techniques, tools, formulas and degree of accuracy needed for the situation.
Rocket Activity (pgs. 69-75)	KY	MA.9-12.MA-HS-AT-S-EI17	Algebraic thinking: Students will write and solve linear sentences, describing real-world situations by using and relating formulas, tables, graphs and equations